

We claim:-

1. A formulation for treating metal surfaces, at least
5 comprising
 - (a) a polyisobutylene modified by terminal polar groups,
obtainable by functionalizing reactive polyisobutylene
having a number-average molecular weight M_n from 150 to
10 50 000,
 - (b) a solvent or solvent mixture capable of dissolving,
dispersing, suspending or emulsifying the polyisobutylene
derivative, and
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 - (c) optionally, further components,

wherein said polyisobutylene modified by terminal polar
groups is one or more selected from the group consisting of

- 20 (A) linear modified polyisobutylene obtainable by
functionalizing linear polyisobutylene which is reactive
only at one chain end,
- 25 (B) linear modified polyisobutylene obtainable by
functionalizing linear polyisobutylene which is reactive
at both chain ends, and
- 30 (C) branched modified polyisobutylene obtainable by
functionalizing branched polyisobutylene which is
reactive at three or more chain ends,

and the degree of functionalization of the chain ends is in
each case at least 65%,

- 35 where, in the case (A), succinic acid radicals in which at
least one carboxyl group is derivatized with polyethylene
glycol substituents or with groups containing polyethylene
glycol substituents and also succinic acid radicals which
40 contain a free carboxyl group or a salt thereof and an
esterified or amidated carboxyl group are excluded as
terminal polar groups.

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2. A formulation as claimed in claim 1, wherein the degree of functionalization is at least 75%.
3. A formulation as claimed in claim 1, wherein the degree of functionalization is at least 85%.
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4. A formulation as claimed in any of claims 1 to 3, wherein the solvent mixture is predominantly aqueous.
- 10 5. A formulation as claimed in any of claims 1 to 3, wherein the solvent is water.
6. A process for treating a metal surface, which comprises contacting said surface with a formulation as claimed in any of claims 1 to 5.
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7. A process as claimed in claim 6, comprising the steps of:
 - (a) where appropriate, cleaning the metal surface to remove dirt, fats or oils,
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 - (b) where appropriate, washing with water,
 - (c) where appropriate, pickling to remove rust and other oxides, in the absence or presence of the formulation of the invention,
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 - (d) where appropriate, washing with water,
 - 30 (e) treating the metal surface with the composition of the invention,
 - (f) where appropriate, washing with water, and
 - 35 (g) where appropriate, aftertreating, in the absence or presence of the composition of the invention.
8. A process for corrosion prevention which comprises coating a metallic surface with a formulation as claimed in any of claims 1 to 5.
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9. A metallic surface comprising at least one coating comprising a polyisobutylene modified by terminal polar groups and also, optionally, further components, obtainable by coating with a formulation as claimed in any of claims 1 to 5, followed by removal of the solvent.
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10. The use of polyisobutylene modified by terminal polar groups and obtainable by functionalizing reactive polyisobutylene having a number-average molecular weight M_n of from 150 to 50 000 to treat metals, wherein said polyisobutylene modified by terminal polar groups is one or more selected from the group consisting of

(A) linear modified polyisobutylene obtainable by functionalizing linear polyisobutylene which is reactive only at one chain end,

(B) linear modified polyisobutylene obtainable by functionalizing linear polyisobutylene which is reactive at both chain ends, and

(C) branched modified polyisobutylene obtainable by functionalizing branched polyisobutylene which is reactive at three or more chain ends,

and the degree of functionalization of the chain ends is in each case at least 65%,

where, in the case (A), succinic acid radicals in which at least one carboxyl group is derivatized with polyethylene glycol substituents or with groups containing polyethylene glycol substituents and also succinic acid radicals which contain a free carboxyl group or a salt thereof and an esterified or amidated carboxyl group are excluded as terminal polar groups.